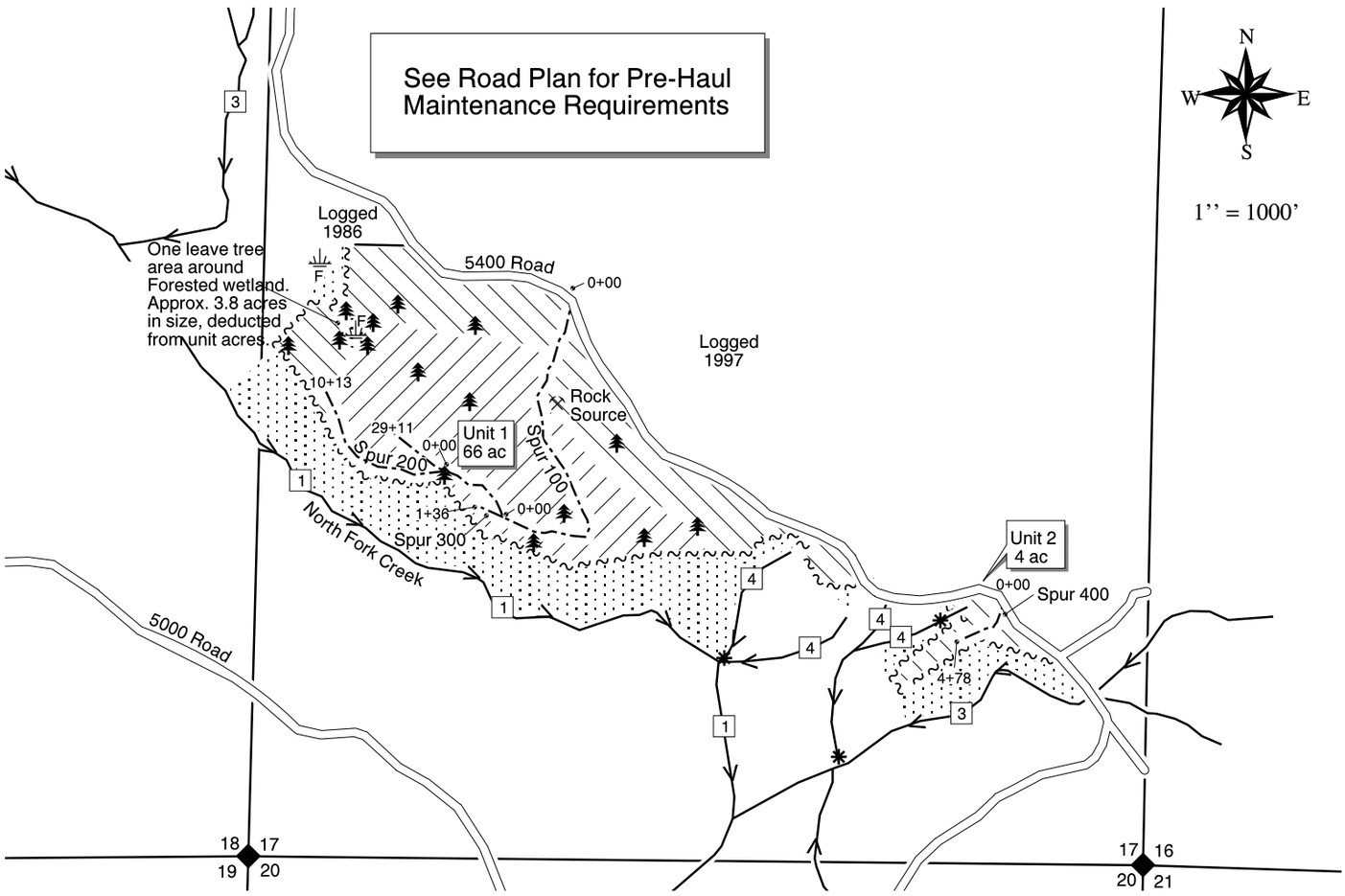
TIMBER SALE MAP

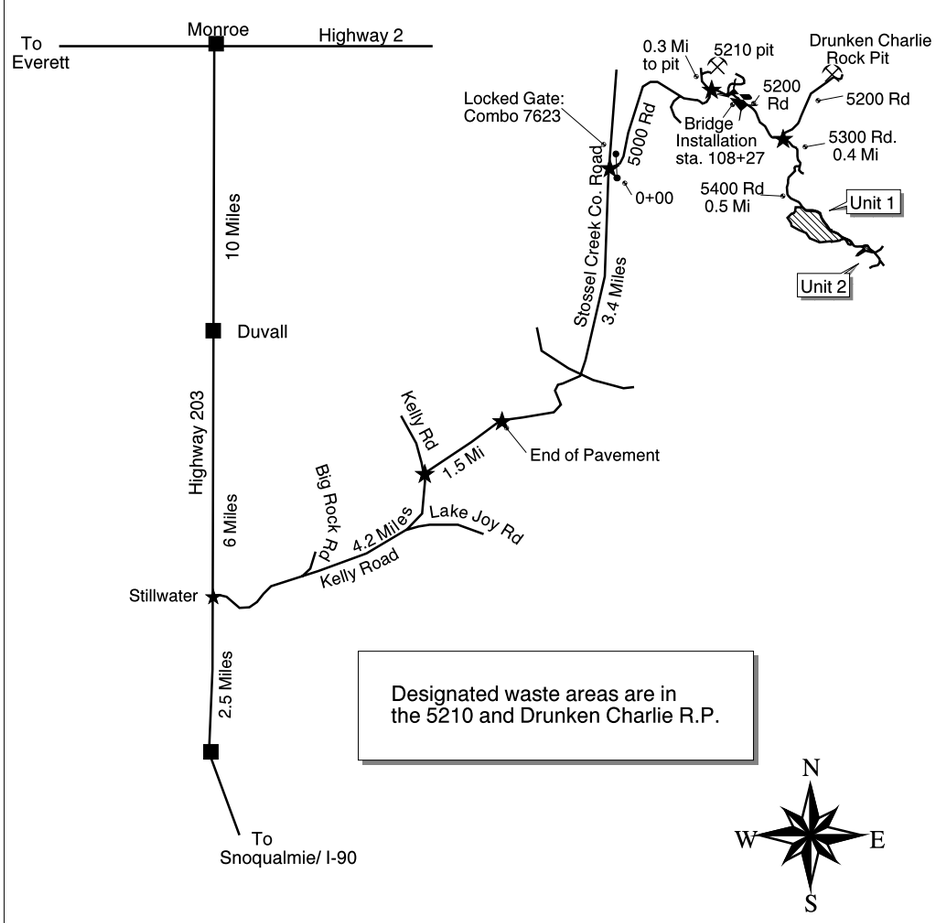
SALE NAME: DOG HAIR
AGREEMENT NO: 30-077623
TRUST(S): FOREST BOARD TRANSFER

REGION: SOUTH PUGET SOUND
COUNTY(S): KING

ROAD PLAN PROJECT MAP
TOWNSHIP 26 NORTH, RANGE 8 EAST, W.M.



VICINITY MAP
Not to Scale



LEGEND

- White Timber Sale Boundary Tags
- Cable on slopes greater than 35%
- Ground Based on slopes less than 35 %
- RMZ/WMZ
- Existing Road
- Optional Construction
- Stream
- Water Type Break
- Rock Pit
- Leave Tree Area marked with Yellow Leave Tree Area tags
- Wetlands
- 3 Water Type
- Survey corner

ELEVATION RANGE:
1,000 to 1,100 feet

Drawn By: A. Mainwaring
Date: April 4, 2006

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
SOUTH PUGET SOUND REGION

DOG HAIR

ROAD PLAN

SECTION 17, TOWNSHIP 26 NORTH, RANGE 08 EAST, W.M.
KING COUNTY

SNOQUALMIE UNIT

AGREEMENT NO.: 30-077623 STAFF ENGINEER: A. McDonald

DATE: 4/1/2006 DRAWN & COMPILED BY: A. McDonald

SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to optional construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
acquisition, manufacture, and application of rock;
grass seeding;
road abandonment.

This project also includes but is not limited to reconstruction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
acquisition, manufacture, and application of rock;
acquisition and installation of erosion control materials;
grass seeding;
acquisition and installation of a modular steel bridge:

Road	**Station(s)**	**Requirements**
5200	108+25 to 112+98	Remove existing culvert and approximately 2100cy of fill material. Design, purchase, and install a modular steel bridge minimum 80 feet in Length and 16 feet in width. Realign existing road to match bridge site alignment. Apply erosion control matting and grass seed site.

This project also includes but is not limited to pre-haul maintenance including:

repairing existing culverts;
spot rocking:

Road	**Station(s)**	**Requirements**
5300	148+00	Spot rock 20 cy. to repair wet road surface and replace lost rock.
5400	174+00	Repair damaged pipe inlet (18" plastic). Place 10 yds. Surface rock over inlet area to protect and direct traffic to outside of curve. Brush outside of curve to encourage traffic use and place 10 yds. surface rock on the outside of curve.
5400	174+75	Spot rock 10 cy. to fill large pothole.
5400	185+00	Spot rock 20 cy. to repair sunken outside wheel track.

SECTION 1 - GENERAL CLAUSES

1.1-1 **ROAD PLAN SCOPE**

Clauses in this plan apply to all construction, reconstruction, or pre-haul maintenance or abandonment including landings unless otherwise noted.

1.1-2 **REQUIRED ROADS**

Reconstruction and pre-haul maintenance of the following roads is required. All roads shall be constructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
5200	108+25 to 112+98	Reconstruction (realignment), and bridge installation
5300	(see Scope of Project, Section 0)	Pre-haul maintenance
5400	(see Scope of Project, Section 0)	Pre-haul maintenance

1.1-3 **OPTIONAL ROADS**

Construction of the following roads is not required. Roads used by the Purchaser shall be constructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
Spur 100	0+00 to 29+11	Optional Construction
Spur 200	0+00 to 10+13	Optional Construction
Spur 300	0+00 to 1+36	Optional Construction
Spur 400	0+00 to 4+78	Optional Construction

1.1-4 **ROAD PLAN CHANGES**

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted in writing, to the Contract Administrator for consideration, submitted plans must be approved before construction begins.

1.1-5 **HIDDEN CONDITIONS**

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.2-1 **CONSTRUCTION PERIOD**

The construction, reconstruction, or pre-haul maintenance on any of the roads specified herein shall not be permitted when in the opinion of the Contract Administrator excessive damage may occur, nor shall it be permitted from November 1 to May 31 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-1C **DAILY CONSTRUCTION TIME**

No operation of road construction equipment will be allowed on weekends or State recognized holidays unless authority to do so is granted in writing by the Contract Administrator.

1.2-1D **NOTICE OF ROAD CLOSURE**

Purchaser shall notify the Contract Administrator of times and/or dates of construction activities on the 5200 road anticipated to affect road use 30 working days before start of interruption. Total length of road closure shall not exceed 30 days.

1.2-2 **HAUL APPROVAL**

Purchaser shall not use roads constructed, reconstructed, or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2-3 **EXCAVATOR CONSTRUCTION**

Roads shall be constructed using track mounted hydraulic excavators unless otherwise authorized, in writing, by the Contract Administrator.

1.2.1-1 **CONSTRUCTION STEPS**

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend 1000 feet beyond completed construction unless approved, in writing, by the Contract Administrator.

Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits, or restrict drainage.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application, and/or timber haul.

1.3-1A **CLOSURE TO PREVENT ROAD DAMAGE**

At any time of the year, the hauling of forest products shall not be permitted when in the opinion of the Contract Administrator excessive road damage may occur.

1.3-1D **DIRT ROADS**

Dirt surface roads shall be water barred and blocked by October 1. Water bars and blocking of roads shall meet the specifications of Clause 10.1-1A.

1.4-2 **SLOPE STAKING**

The following road shall be constructed in accordance with construction stakes.

Road	Stations
5200	108+25 to 112+98

1.4-3 **R P DAMAGE**

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1 **ROAD MAINTENANCE RESPONSIBILITY**

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

SECTION 2 - CLEARING

2.1-1 **CLEARING SPECIFICATION**

Fell all vegetative material larger than 6 inches DBH or over 20 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

SECTION 3 - GRUBBING

3-1 **GRUBBING SPECIFICATIONS**

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2 **GRUBBING LIMITS**

Grubbing limits are defined as the entire road area between and including the external grubbing limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1 **DEBRIS DEFINITION**

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume ungrubbed, within the grubbing limits as shown on the TYPICAL SECTION SHEET.

4.1-2 **DISPOSAL COMPLETION**

All right-of-way debris disposal shall be completed prior to the application of rock and/or timber haul.

4.2.3-3 **DEBRIS PLACEMENT**

Right-of-way debris shall not be placed against standing timber.

4.2.3-4 **SCATTERING RIGHT OF WAY DEBRIS**

Right-of-way debris shall be placed or scattered outside the grubbing limits.

SECTION 5 - EXCAVATION

5.1-1 **DEFAULT ROAD DIMENSIONS**

Unless controlled by specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3 **ROAD GRADE AND ALIGNMENT**

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 12 percent adverse, or as specified on drawings. Minimum radius curve is 60 feet.

5.1-4 **CURVE WIDENING**

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

Curve widening, where required, shall be added to the inside of curves.

5.1-7 **CONSTRUCTION TOLERANCES**

Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8 **CUT SLOPE RATIO**

Excavation (cut) slopes shall be constructed no steeper than shown on the following table:

Material Type	Excavation Slope Ratio	Percent
Common Earth (on side slopes less than 55%)	1:1	100
Common Earth (55% to 70% sideslopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

5.1-9 **SHAPING CUT SLOPE**

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10 **FILL WIDENING**

Embankments shall be widened as follows:

Height at Shoulder	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11 **FILL SLOPE RATIO**

Embankment (fill) slopes shall be constructed no steeper than shown on the following table:

Material Type	Embankment Slope Ratio	Percent
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80
Sandy Soils .	2:1	50

5.1-12 **DISPOSAL OF ORGANIC DEBRIS**

Organic material shall be excluded from embankments.

5.1-16C **WASTE DISPOSAL**

On the following road, all excavated material shall be end hauled to designated waste areas. Material will be placed in waste areas at maximum slopes of 2:1, as directed by the Contract Administrator.

End Haul/Waste Material Disposal

Road	Stations	Waste Area Location	Remarks
5200	108+25 to 112+98	Drunken Charlie Pit or 5210 Pit	Approx. 2100 cy waste material

5.1-22 **PROHIBITED DISPOSAL AREAS**

Waste material shall not be deposited within 100 feet of a culvert installation, live stream, Riparian Management Zone, wetland or Wetland Management Zone.

5.1-25 **TURNAROUNDS**

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.3-1 **FILL COMPACTION**

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-3 **SEEDING CONSTRUCTION SLOPES**

On the following roads, Purchaser shall seed soil exposed by construction activity. 100 pounds of seed will be provided by the Purchaser and spread evenly over all soils disturbed by construction as directed by the Contract Administrator.

Road	Seed Specification	Fertilizer Specification	Stations
5200	Pasture Mix	16-16-16	108+25 to 112+98

5.5-4 **SUBGRADE COMPACTION**

Constructed or reconstructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 15,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5 **SUBGRADE CROWN**

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

5.4-5B **EROSION CONTROL MATTING**

On the following road, Purchaser shall provide and install degradable erosion control matting to provide full coverage of disturbed embankment slopes. Matting shall be natural fiber matting made of jute or coconut, or an erosion control blanket consisting of a wood excelsior covered on both sides with biodegradable netting. Erosion control matting shall be recommended by manufacturer for use on embankments with a slope of 2:1 (H:V) or steeper. Installation shall be per manufacturers recommendations. Material shall be approved by Contract Administrator prior to application.

Road	Stations	Quantity (sq. yds)
5200	Bridge site excavation	900

SECTION 6 - DRAINAGE

6.2.1-1A **TEMPORARY CULVERTS**

Purchaser shall furnish, install and maintain temporary culverts of the length and diameter specified on the CULVERT LIST. Culverts may be new or used steel, plastic, concrete, or such other material as approved by the Contract Administrator.

6.2.1-1B **POLYETHYLENE AND ALUMINIZED REQUIRED**

Where permanent culverts are specified, purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) and on culverts over 48 inches, aluminized culverts (meeting ASTM A 819, AASHTO M-274 aluminized steel Type 2 and AASHTO M-36 specifications) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.2.1-1 **CULVERT SPECIFICATIONS**

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL.

6.2.2.3-1 **CROSS DRAIN SKEW**

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2 **CULVERT SLOPE**

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1 **ENERGY DISSIPATORS**

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1 **DITCH CONSTRUCTION**

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.3-2 **DITCH, HEADWALL, AND CATCHBASIN CONSTRUCTION**

Shaping the ditchline, culvert headwalls, and catch basins shall be completed prior to application of rock and/or timber haul and shall be done in accordance with the TYPICAL SECTION SHEET and CULVERT AND DRAINAGE SPECIFICATION DETAIL.

6.5-1 **HEADWALLS**

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

SECTION 7 - ROCK

7.1-1 **ROCK SOURCES**

Rock for construction under this contract may be obtained from sources on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use these rock sources, a joint operating plan shall be developed. All parties shall follow this plan.

Source	Location	Type
Drunken Charlie Pit	SW ¼ of the SW ¼ of Section 5, T26NR08E W.M. (5200 Rd)	4 inch in place, Rip rap
On-site source(s)	See Road Plan Project map	4 inch in place
SPS123-CV120	SW ¼ of Section 11, T26NR07E	Sand and Gravel

7.1-1C **COMMERCIAL SOURCE**

Rock for reconstruction under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

7.1-3 **PIT OPERATIONS**

All rock source operations shall be conducted as directed by the Contract Administrator and in accordance with an approved development plan.

7.2.1-4 **ROCK QUALITY**

"2 1/2 INCH MINUS CRUSHED" rock shall meet the following specifications for gradation when placed in hauling vehicles:

2½ INCH MINUS CRUSHED ROCK

% passing 2½" square sieve 100%
% passing 2" square sieve ..... 65 -100%
% passing 1" square sieve ..... 50 - 70%
% passing ¼" square sieve ..... 30 - 50%
% passing U.S. #40 sieve ..... 16% Max
% passing U.S. #200 sieve ..... 5% Max

All percentages are by weight.
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

7.2.1.1-8 **4 INCH IN PLACE**

"4 INCH IN PLACE" rock shall have a minimum of 90 percent of the top 4 inches of the running surface pass a 4 inch square opening. In place processing such as grid rolling, jaw crushing, or such other method as is demonstrated by the Purchaser to be effective, shall be required if necessary to achieve this requirement.

7.2.1.2-2 **DEBRIS IN ROCK**

Pit run rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash.

7.2.4-1 **DRILLING AND SHOOTING SPECIFICATION**

Rock drilling and shooting shall meet the following specifications:

a. Oversize material remaining in the rock source at the conclusion of the timber sale shall not exceed 5 percent of the total volume mined for the sale.

b. Oversize material is defined as rock fragments larger than two feet in any dimension.

c. The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling.

7.4.2-1 **MINIMUM ROCK**

Apply at least the minimum required rock quantity as shown on ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-2 **SUBGRADE APPROVAL FOR ROCK**

Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-3B **GRADING AND COMPACTING**

On the following road, a grader shall be used to shape the existing and/or constructed surface and surfaces shall be compacted full width except ditch by four coverages with a smooth-drum vibratory roller weighing at least 15,000 pounds and at a maximum operating speed of 3 mph.

Road	Stations
5200	108+25 to 112+98

7.4.2-7 **ROCK FOR WIDENING**

Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8 **ROCK SHAPING**

Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.2-9 **SPOT ROCK**

Purchaser shall spot patch and/or apply rock as directed by the Contract Administrator in accordance with quantities shown on ROCK LIST.

7.4.3-2 **ROCK COMPACTION**

On the following roads, rock shall be spread and compacted full width in one lift not to exceed 12 inches uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 15,000 pounds. Four complete passes at a maximum speed of 3 mph shall be made on each lift.

Road	Stations
5200	108+25 to 112+98
Spur 100	0+00 to 29+11

7.4.3-3 **COMPACTION TIMING**

On other roads, rock shall be spread and compacted using loaded haul trucks concurrently with rock hauling operations.

7.4.4-1 **RIP RAP SPECIFICATION**

Riprap shall consist of angular stone, placed as indicated in this plan, or as directed by the Contract Administrator.

Loose Riprap - The stone for loose riprap shall be hard, sound and durable. It shall be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Loose riprap shall be free of rock fines, soil, or other extraneous material.

a. Heavy Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Minimum Size	Maximum Size
40% / 90%	1 Ton (1/2 cu. yd.)	--
70% / 90%	300 lbs. (2 cu. ft.)	--
10% / 30%	--	50 lbs.

b. Light Loose Riprap - Shall meet the following requirements for grading:

At Least/Not More Than	Size Range	Maximum Size
20% / 90%	300 lbs. to 1 ton	--
80% / 90%	50 lbs. to 1 ton	--
10% / 20%	--	50 lbs.

7.4.4-2 **RIP RAP PLACEMENT**

Placement shall be by zero drop height methods only.

8.3-2 **BRIDGE SPECIFICATION**

The bridge listed below shall be modular and constructed of steel or steel and concrete. The bridge shall be designed by a professional structural engineer licensed in the State of Washington. The footings and foundation shall be designed by a professional engineer licensed in the State of Washington. If requested by the Contract Administrator, the Purchaser shall provide a licensed engineer who shall perform on-site inspections at each construction stage as outlined below to ensure materials and procedures used during construction comply with the design and shall notify the Contract Administrator in writing that all elements of each of the following construction stages are in conformance with the design before allowing construction to continue on to the next stage.

a. Fill removal, foundation excavation and preparation.
b. Placement of erosion protection.
c. Abutment placement and construction.
d. Sill placement.
e. Bridge placement and assembly.
f. Backwall placement and approach construction.
g. Bank and fill slope erosion protection.

Road	Station	Min. Length	Loading	W.B.W.G.*	Vert.Clear**	Hor. Align
5200	110+82 to 111+62	80’	U-80 (L-90 overload)	16’	P.P.	P.P.

*W.B.W.G. = Width between wheel guards
**Vertical clearance shall be measured from 100-year flood level.
P.P. = On the attached plan/profile

Guardrails designed to withstand the impact of a loaded vehicle shall be installed with a minimum height of 21 inches. The bridge running surface shall have a minimum of two percent grade, or as designed, with a smooth transition between the approach and running surface.

The bridge shall meet the following specifications:

Deflections due to dead load, service live load and controlled live load with impacts shall not exceed L/500 of the span;

Running surface shall be full width running planks of treated #2 Douglas Fir 4” x 12” or concrete;

W-beam guardrails and terminal ends in compliance with Washington State Department of Transportation Standard Plans 1998;

Galvanized sheet piling or concrete backwall as per Clause 8.3-7.

8.3-2A **BRIDGE INSTALLATION**

Each stage of construction, as listed below, shall be approved in writing by the Contract Administrator or their designee, prior to commencement on the following stage:

1. Fill removal and bank erosion protection.
2. Abutment construction.
3. Bridge placement and connections.
4. Backwall placement, subgrade compaction and rock application.
5. Fill slope erosion protection.

8.3-2B **BRIDGE DRAWINGS AND CALCULATIONS**

Purchaser shall submit the reports and plans listed below to the Region Engineer at the South Puget Sound Region office at 950 Farman Ave. N., Enumclaw, WA 98022. All drawings and calculations shall be prepared, stamped, and signed by a registered professional engineer licensed in the State of Washington. Purchaser shall not proceed with construction until the Region Engineer has issued written approval. Reports and plans will be approved or rejected within 10 working days of receipt. Within 15 working days of final approval, Purchaser shall submit three complete sets of final plans.

Layout and Design Drawings
Load Bearing Calculations
Final Plans

8.3-4 **LIFT DEVICE**

Lift devices shall be provided for each section.

8.3-5 **MATERIAL SPECS**

Flanges used for connecting the stringer units together shall be designed to facilitate field assembly. All bolts used to facilitate field assembly will be galvanized or manufacturer specified. All materials necessary for assembly shall be included with the structure and meet the following requirements:

1. Workmanship, fabrication and shop connections will be in accordance with current edition of the American Association of State Highway and Transportation Officials Standard Specifications (AASHTO) for highway Bridges. Design details not covered by the AASHTO specifications shall be in accordance with other normally accepted structural design standards.

2. All exposed steel used in this structure shall conform to the requirements of AASHTO M270 Grade 50W (A588 weathering steel), if not otherwise specified as being galvanized.

3. All galvanizing shall be done after fabrication and shall be in accordance with AASHTO Designation M111-80 (ASTM Designation: A123-78) and/or AASHTO Designation M232-84 (ASTM Designation A153-82).

4. All hardware connections and fasteners shall be in accordance with AASHTO Designation M164 (ASTM Designation A325).

5. All timber used shall be pressure treated Douglas-Fir in accordance with AASHTO Designation M168-84. All materials shall be No. 2 and better in grade. All of the pressure treated timber shall be incised and treated by a empty cell process in accordance with AASHTO M133-86 and AWPA Standard P8-91. Preservatives utilized will be hydrocarbon solvent, Type A, to a minimum net retention of .50 lb/cu.ft. In accordance with AWPA Standard C28-91.

6. Elastomeric bearing pads shall conform to the requirements of AASHTO M251.

7. All concrete used shall conform to AASHTO specifications.

8.3-6 **BRIDGE DECK**

Bridge deck shall be 7-gauge galvanized corrugated steel or modular concrete panels. Steel shall be placed perpendicular to the direction of traffic and sized and spaced for design loading. The deck shall have a positive connection joining the deck panels to the modular bridge sections. Running surface shall be full width running planks of treated #2 Douglas Fir 4” x 12” or concrete.

8.3-7 **BACK WALLS**

Back walls shall be furnished for each end of the bridge to support the roadway at the end of the bridge. Back wall shall be galvanized steel with a minimum thickness of 7 gauge, or concrete. Back walls shall extend from the top of the bridge footing to the top of the bridge stringers. Road fill shall be prevented from entering the stream channel by use of appropriate containment structures.

8.4-8 **GATE CLOSURE**

During periods of hauling, Purchaser shall keep gates closed except for passing vehicles. Gates shall be closed and locked when no operation is in progress.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.2-1 **LANDING DEBRIS**

Purchaser shall reduce or relocate debris generated by road and landing construction, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2 **LANDING DRAINAGE**

Purchaser shall provide for drainage of the landing surface as approved by the Contract Administrator.

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1 **ABANDONMENT**

If constructed the following roads shall be abandoned by the Purchaser prior to the termination of this contract.

Road	Stations	Type
Spur 200	0+00 to 10+13	Light
Spur 300	0+00 to 1+36	Light
Spur 400	0+00 to 4+78	Light

10.1-1A **LIGHT ABANDONMENT**

Light Abandonment shall consist of:

constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 200 feet;

skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;

keying water bars into ditchline;

blocking front of road with stumps, and spreading logging slash on road for first 100 feet, to a min. depth of 1 foot;

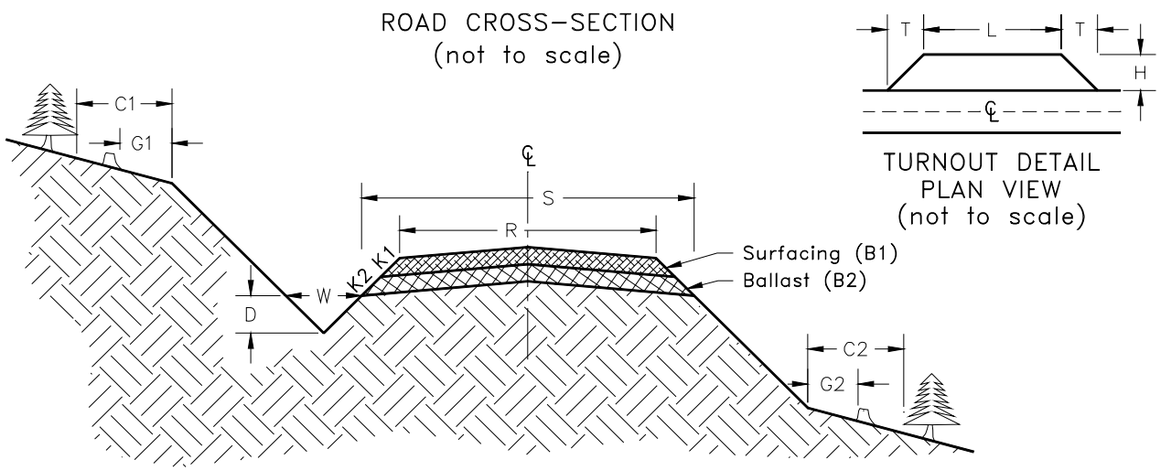
removing ditch cross drain culverts and leaving the resulting trench open;

sloping all trench walls and approach embankments no steeper than 2:1;

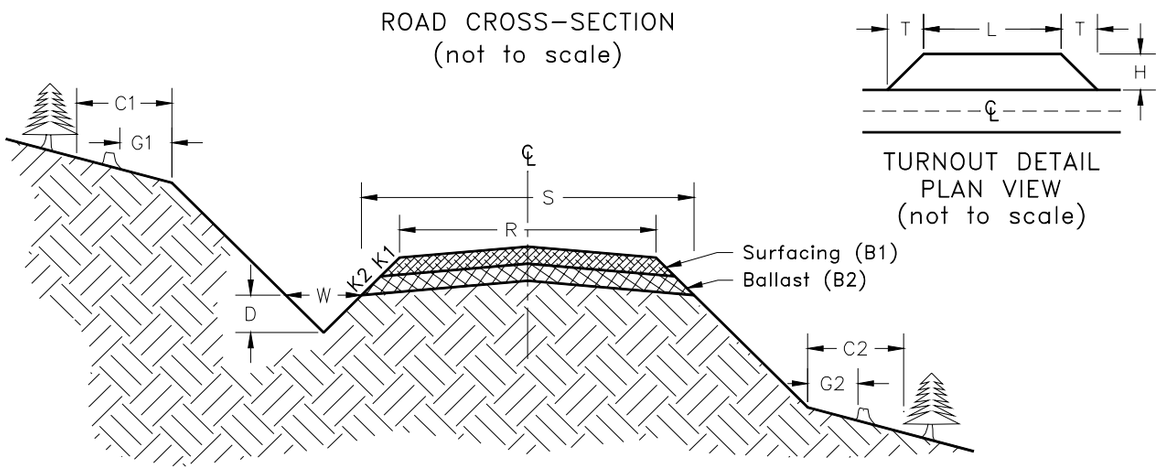
removing culverts from State Land;

all work shall be completed as directed by the Contract Administrator.

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Ditch		Crown in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)		Cut Slope Ratio	Fill Slope Ratio
						Width (feet)	Depth (feet)							
				S	R	W	D		G1	G2	C1	C2	%	%
Spur 100	0+00	29+11	C	15	10	2	1	4	2	2	5	5	See clause 5.1-8	See clause 5.1-11
Spur 200	0+00	10+13	C	15	10	2	1	4	2	2	5	5	See clause 5.1-8	See clause 5.1-11
Spur 300	0+00	1+36	C	15	10	2	1	4	2	2	5	5	See clause 5.1-8	See clause 5.1-11
Spur 400	0+00	4+78	C	15	10	2	1	4	2	2	5	5	See clause 5.1-8	See clause 5.1-11
5200	108+25	112+98	B	17	12	3	1	4	5	5	10	10	See clause 5.1-8	See clause 5.1-11



ROCK LIST

BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2	**4" in-place**				L	H	T
Spur 100	0+00	11+50	1 ½:1	12"	43	11.5	494.5	DCP/On-Site			
Spur 100	11+50	14+50	1 ½:1	18"	68	3	204	DCP/On-Site			
Spur 100	14+50	29+11	1 ½:1	12"	43	14.6	627.8	DCP/On-Site			
*Spur 200	0+00	10+13	1 ½:1	12"	43	10.1	434.3	DCP/On-Site			
*Spur 300	0+00	1+36	1 ½:1	12"	43	1.4	60.2	DCP/On-Site			
*Spur 400	0+00	4+78	1 ½:1	12"	43	4.8	206.4	DCP/On-Site			
Landing Surfacing							1300	DCP/On-Site			
					Light Loose Rip rap						
Bridge site		Stream bank erosion protection					80	DCP			

BALLAST TOTAL **3407** Cubic Yards

SURFACE

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Total	Rock Source
			K1	B1	**2 ½" minus**			
5200	108+25	112+98	1 ½:1	12	50	4.7	235	Commercial
Spot Rock	See Scope of Work for locations and amts.						70	Commercial
					Sand and gravel			
Bridge site (stream bed material)							80	SPS123-CV120

SURFACE TOTAL **385** Cubic Yards

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

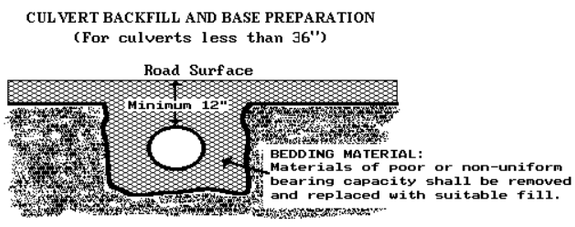
NOTE: Yardages are estimated on a compacted (In-Place) basis. Compliance of required rock will be based on compacted depth measurement.

DCP = Drunken Charlie Pit.
On-Site = in unit rock development source.
Commercial = commercial source.
SPS123-CV120 = Sand and gravel stream material source

CULVERT LIST

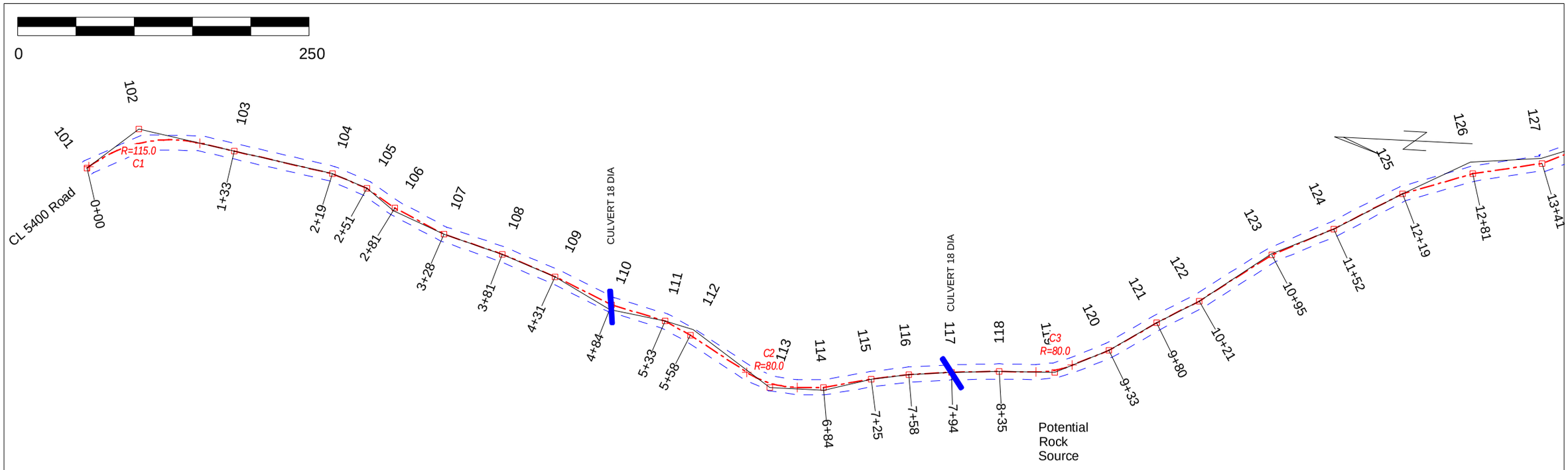
Road Number	Location	Culvert Dia.	Culvert Type	Length (ft) Culvert	Length (ft) Downspt	Length (ft) Flume	Riprap (C.Y.) Inlet	Riprap (C.Y.) Outlet	Riprap (C.Y.) Type	Backfill Material	Placement Method	Const. Staked	Remarks
Spur 100	4+84	18”	PD	30						NT			
Spur 100	7+94	18”	PD	30						NT			
Spur 100	16+00	18”	PD	30						NT			
Spur 100	22+60	18”	PD	40						NT			
Spur 400	3+20	18”	TEMP	30						NT			

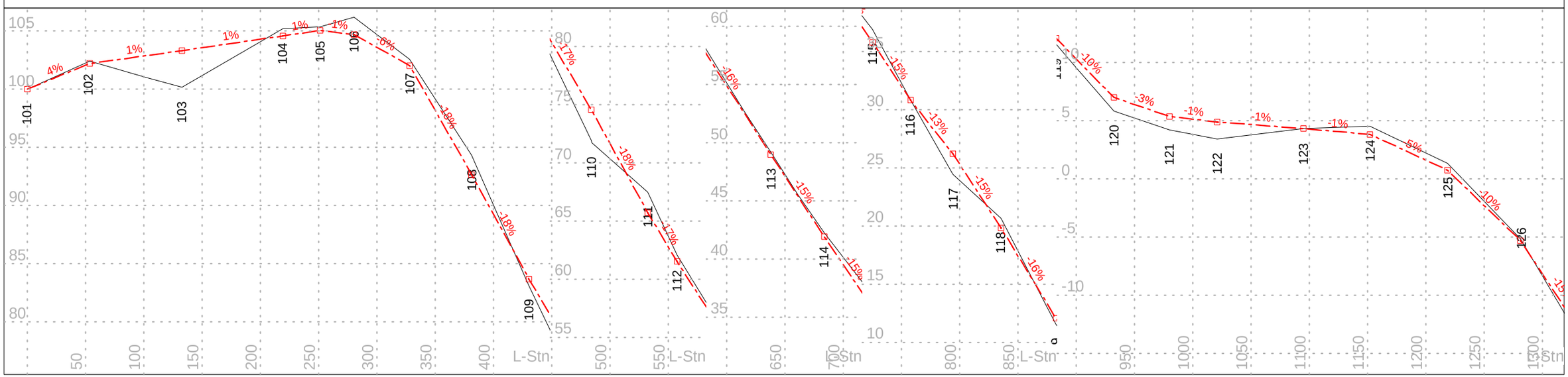
PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S
GS16 = Galvanized Steel AASHTO No. M36, 16 Gauge
AS12 = Aluminized Steel AASHTO No. M274, 12 Gauge
TEMP = Temporary Culvert



Key:

QS - Quarry Spalls
SR - Shot Rock
NT - Native (bank run)
SL - Select Fill
HL - Heavy Loose Riprap
LL - Light Loose Riprap
Flume - Half round pipe
Downspout - Full round pipe





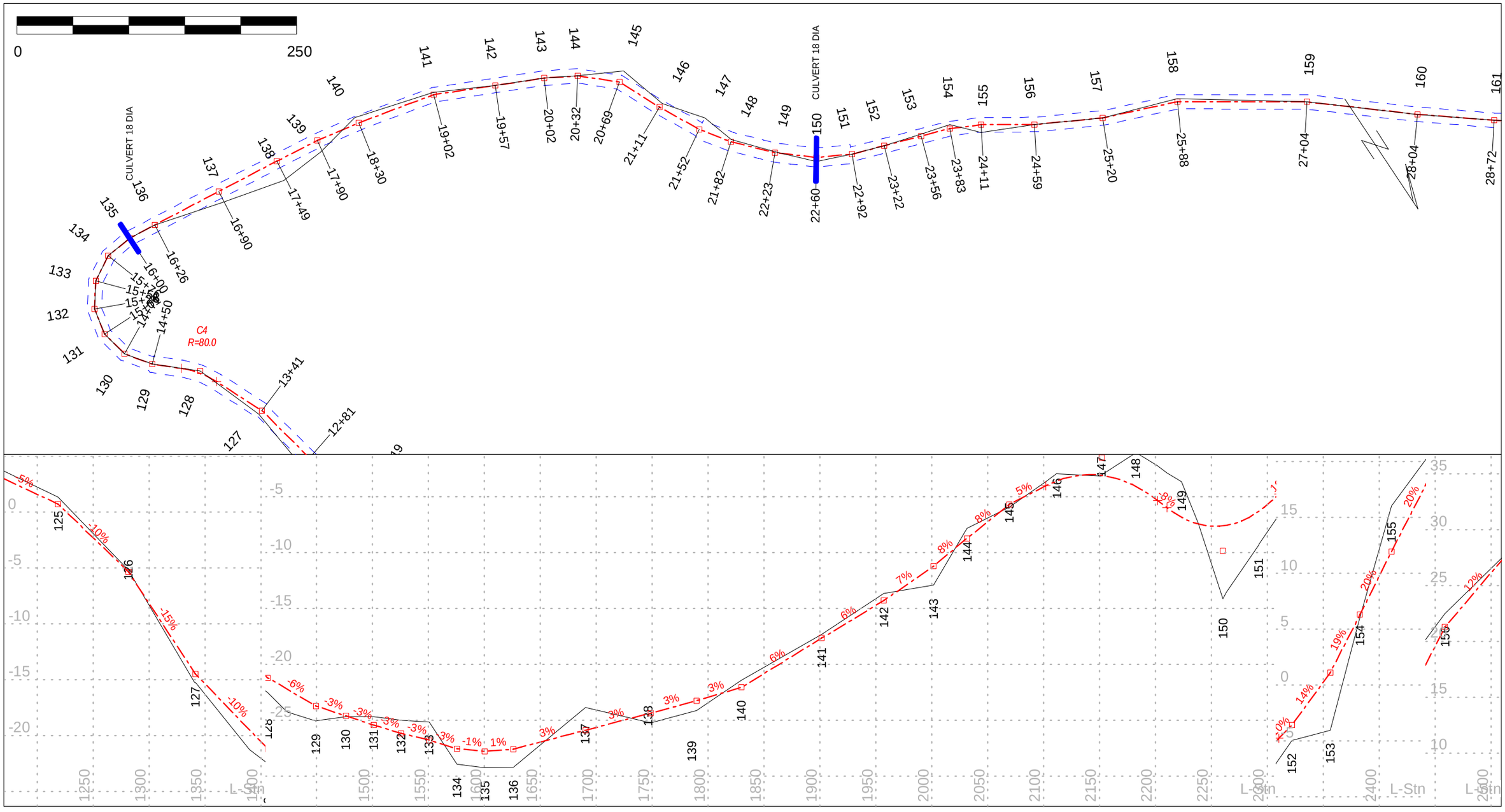
Washington State Department of Natural Resources
South Puget Sound Region

WASHINGTON STATE DEPARTMENT OF Natural Resources

Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 100

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 1 of 3



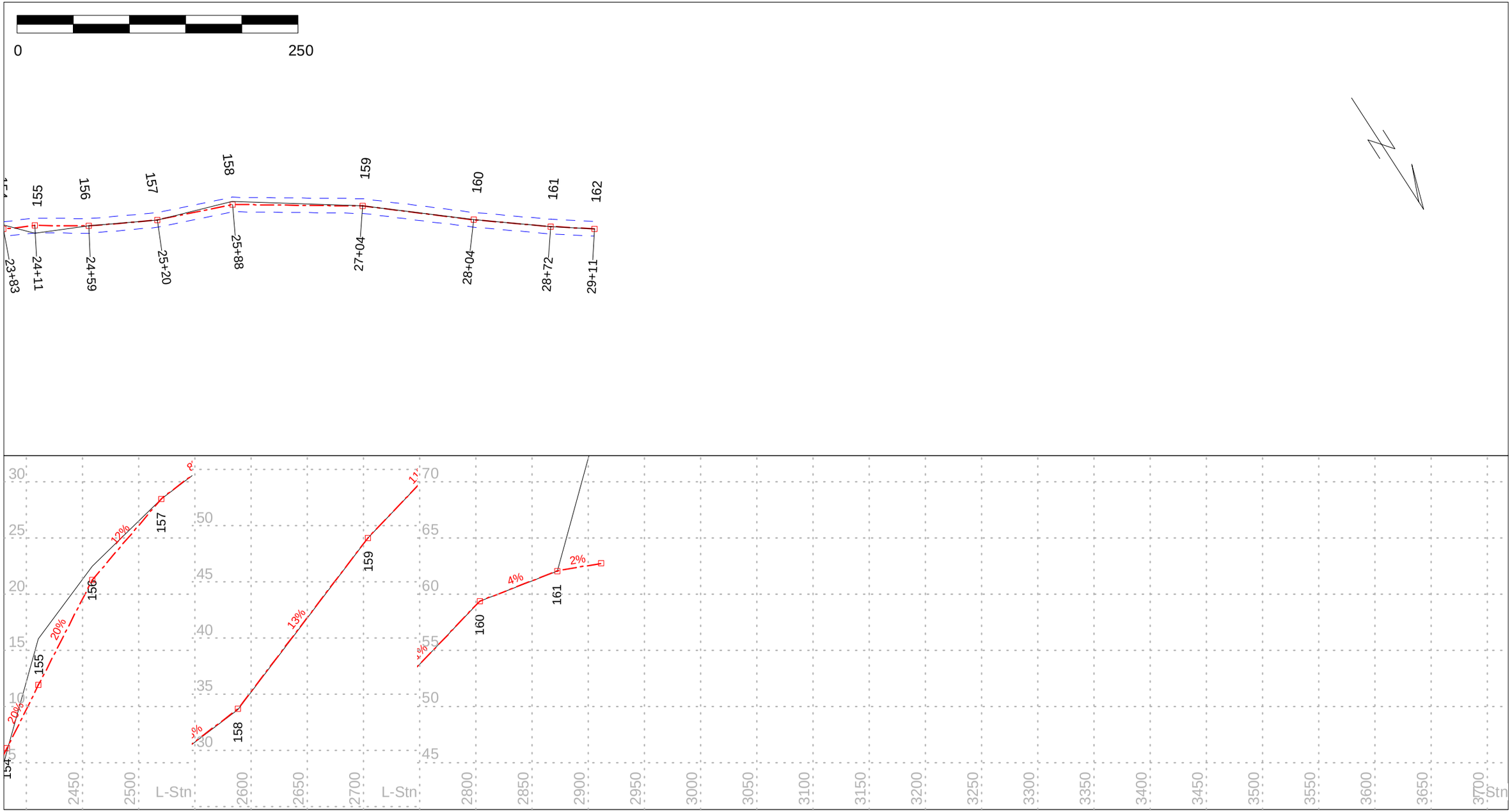
Washington State Department of Natural Resources
South Puget Sound Region

WASHINGTON STATE DEPARTMENT OF Natural Resources

Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 100

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 2 of 3



Washington State Department of Natural Resources
South Puget Sound Region

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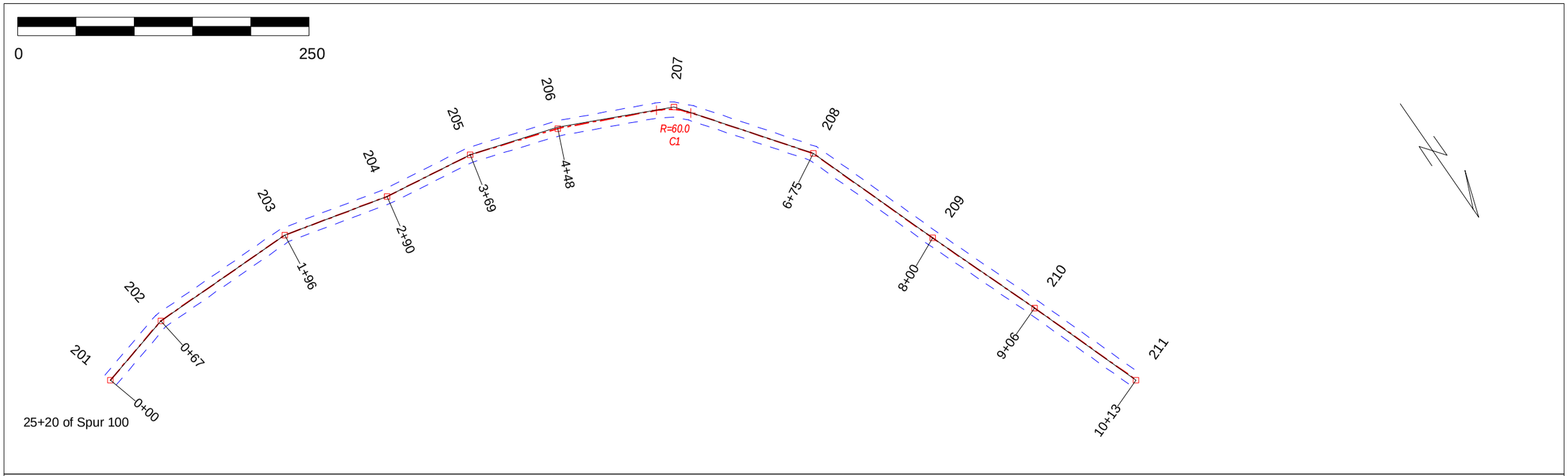
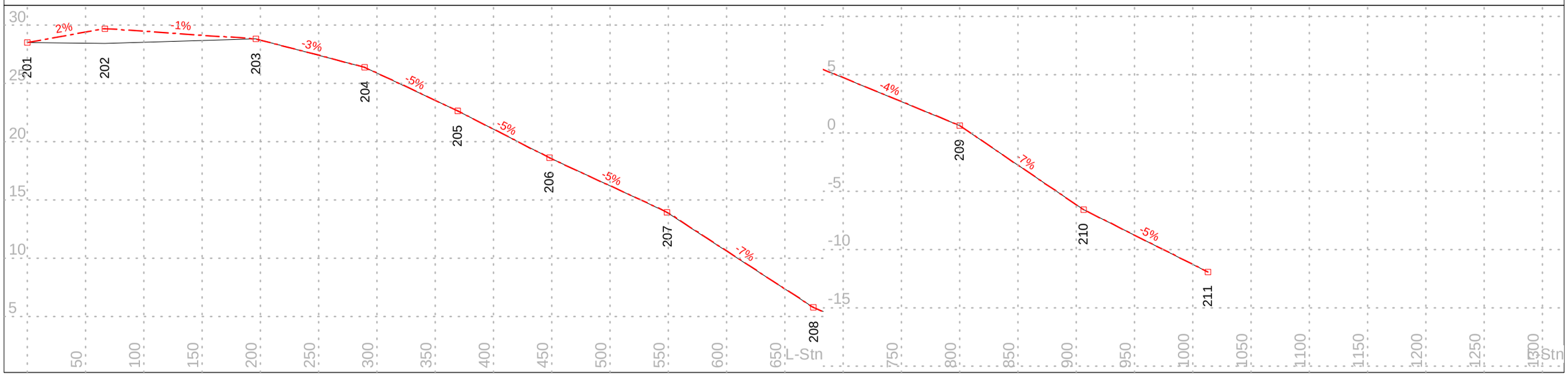
Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 100

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 3 of 3





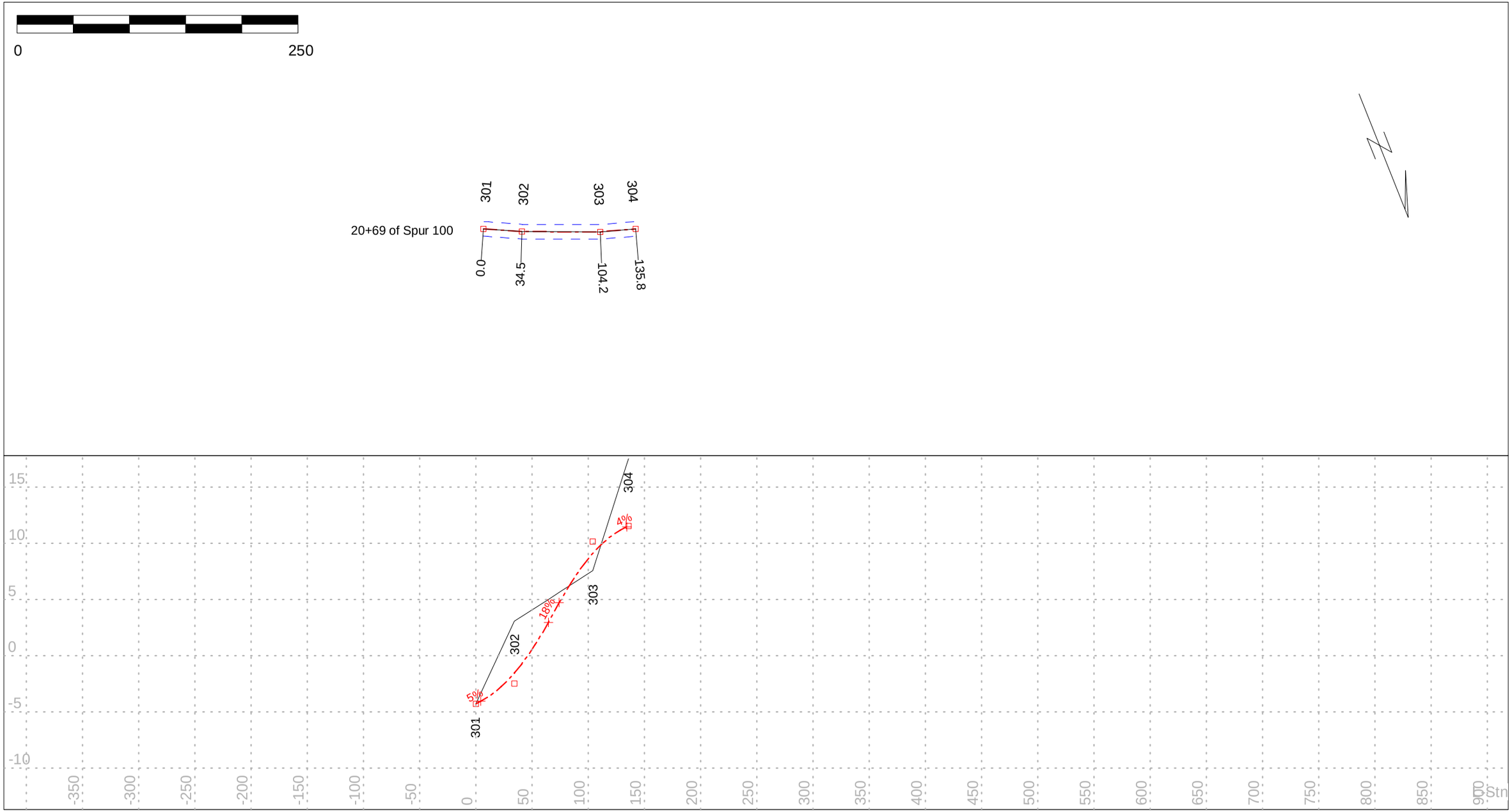
Washington State Department of Natural Resources
South Puget Sound Region

WASHINGTON STATE DEPARTMENT OF Natural Resources

Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 200

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 1 of 1
oadway



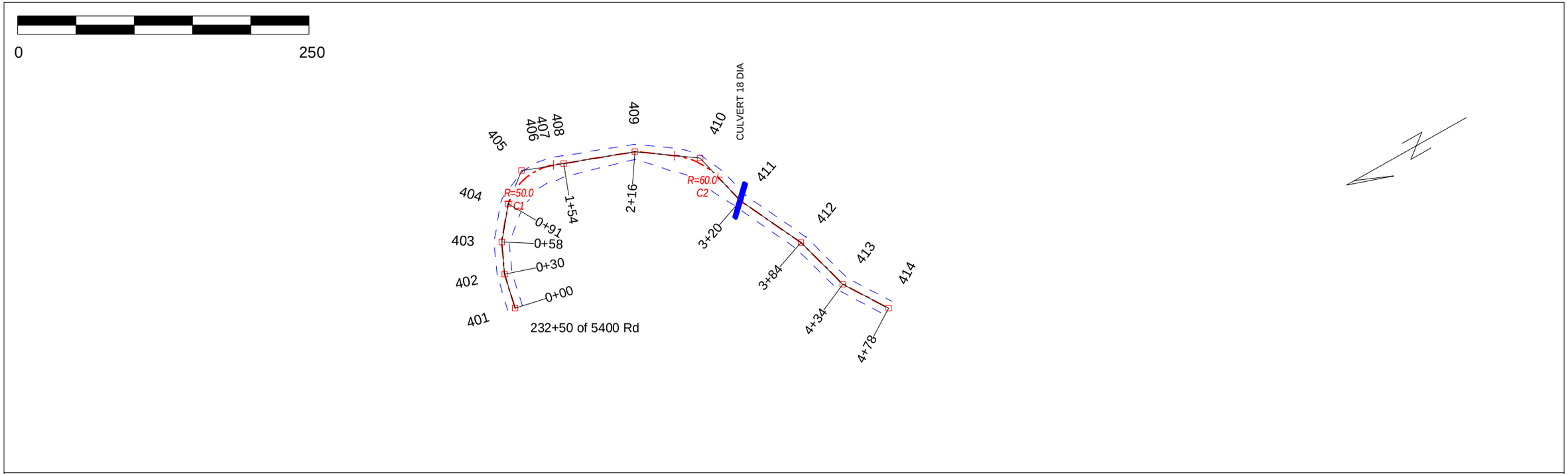
Washington State Department of Natural Resources
South Puget Sound Region

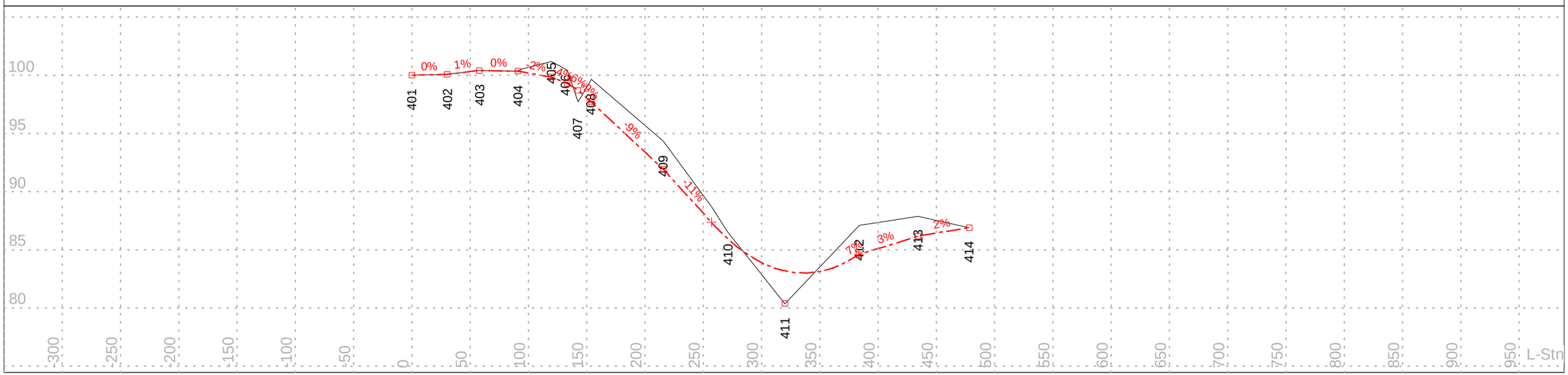
WASHINGTON STATE DEPARTMENT OF Natural Resources

Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 300

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 1 of 1





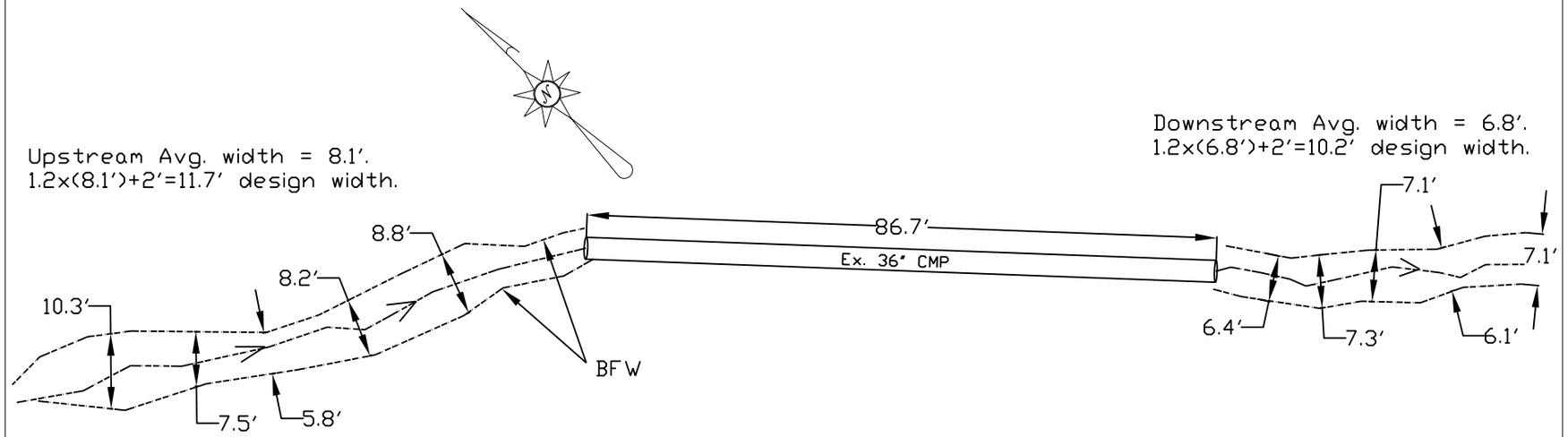
Washington State Department of Natural Resources
South Puget Sound Region

WASHINGTON STATE DEPARTMENT OF Natural Resources

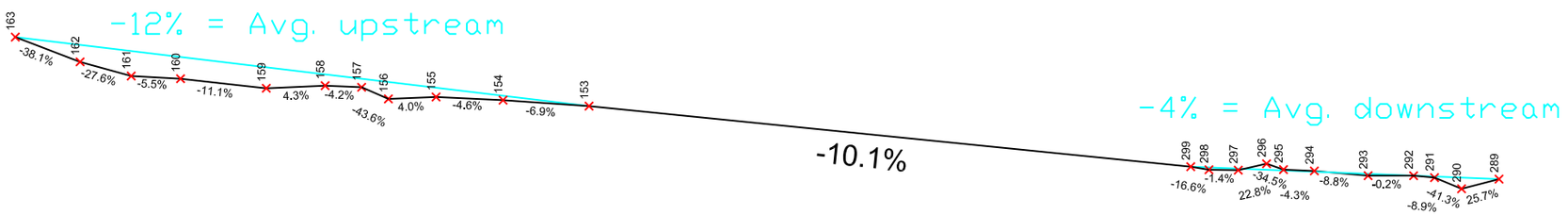
Plan Scale 1:1200
Profile Vert Scale 1:120
Profile Horz Scale 1:1200

Sale: Doghair (30-077623)
Road Design: Spur 400

Date: 4/1/2006
Revision No: 0
Engineer: A. McDonald
Page 1 of 1



Plan View Existing



Profile View Existing

RMAP Pipe Replacement T26R08E-8

Doghair Timber Sale 30-077623

Existing Stream Plan &

Profile View

Date: 4/1/2006

Scale: 1" = 20'

Sheet: 3 of 4

Drawn By: A. McDonald

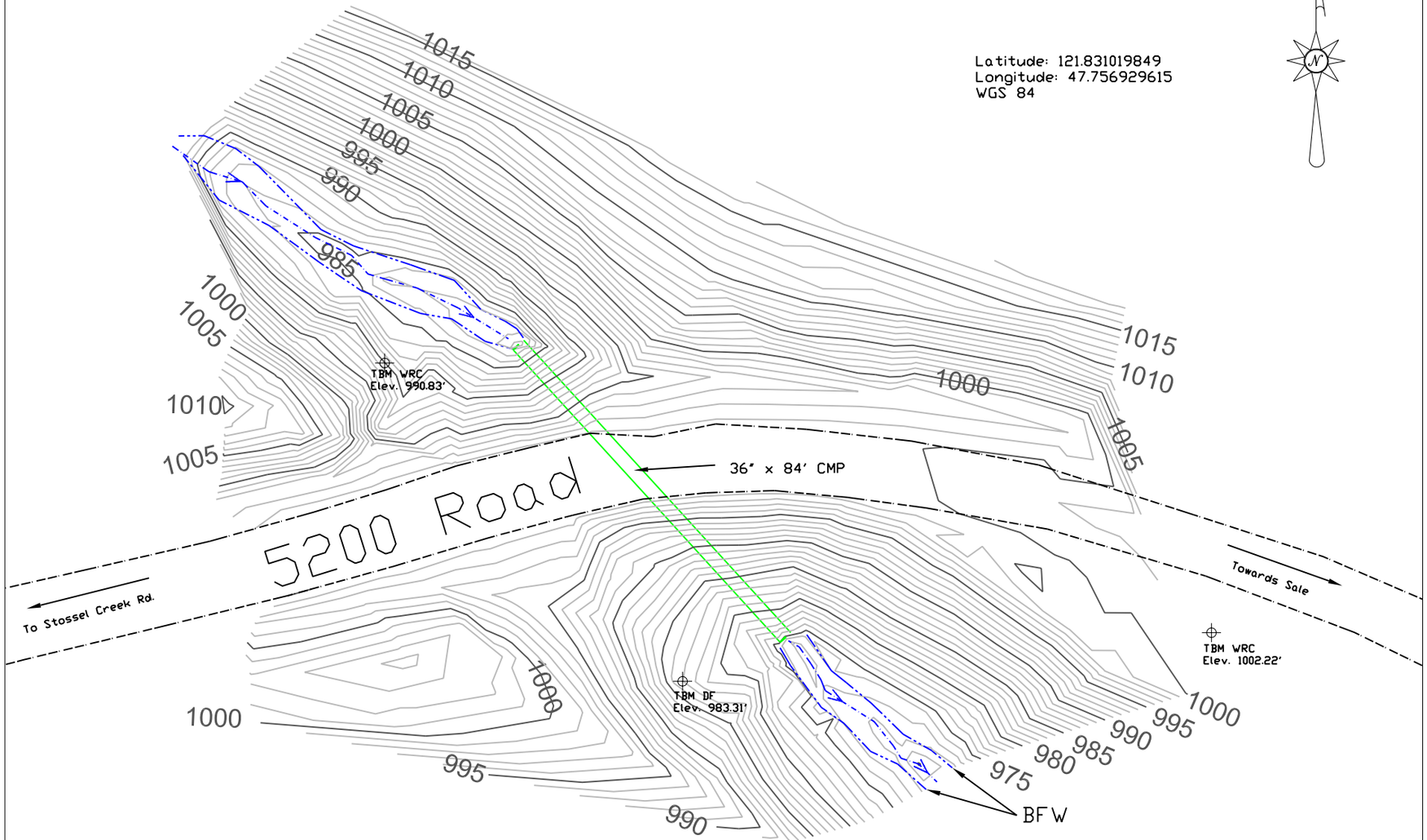
Drawn On: 4/1/2006

WASHINGTON STATE DEPARTMENT OF

Natural Resources

SPS Region

Existing Site



Estimated 2100 cy of fill to be removed and hauled to waste area. Waste areas are located on both sides of excavation, approx. 1 1/2 miles away from site, at the Drunken Charlie Pit, and the 5210 Pit. See Timber Sale Map for locations.

RMAP Pipe Replacement T26R08E-8

Doghair Timber Sale 30-077623

Existing Site Plan View

Date: 4/1/2006

Scale: 1" = 20' (elevations ref. to local BM's)

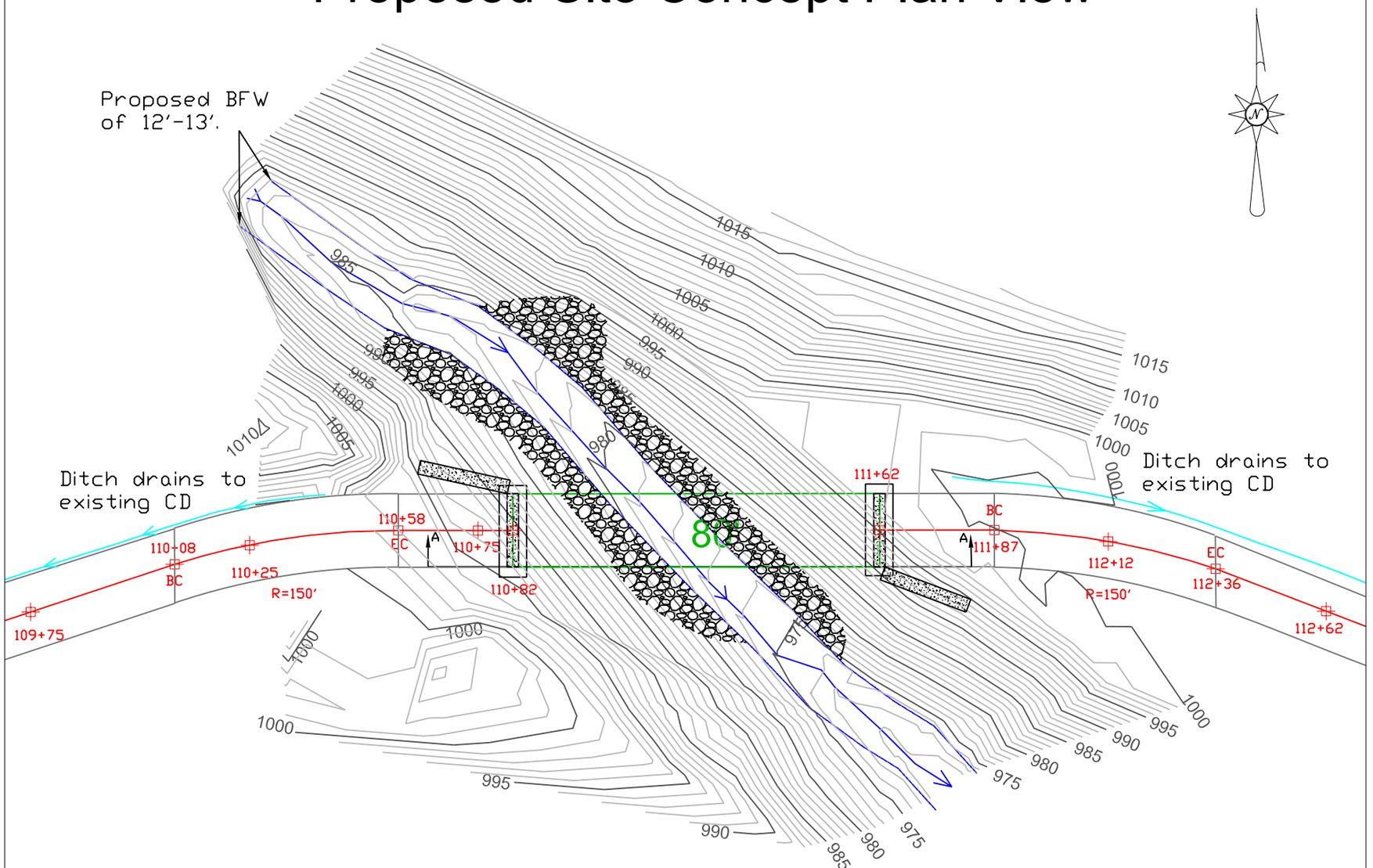
Sheet: 1 of 4

Drawn By: A. McDonald

Drawn On: 4/1/2006

WASHINGTON STATE DEPARTMENT OF
Natural Resources
SPS Region

Proposed Site Concept Plan View



Removal of existing fill to natural ground slope extents. Reconstructed slopes to match natural slope gradients on completion.

Depth of footings and final bridge length to be designed by licensed engineer to specifications in Road Plan.

Construction site sediment and waste water management will be required.

If unsuitable Stream bed material is found after pipe removal, excavation of up to 80cy of this material and replacement with suitable stream substrate may be required. Suitable material is available on State land at no charge, located 5 mi. one-way from project area.

Waste water management will be required during stream release into new channel. Control by creating a downstream sump, and pumping sediment laden water to a suitable dispersal area. Pumping shall be continued until discharged water is free of sediment.

Any temporary stream bypass pipe installed shall be at least 24" in diameter.

Disturbed soil to be grass seeded and protected using bio-degradable erosion control blanket.

RMAP Pipe Replacement T26R08E-8

Doghair Timber Sale 30-077623

Proposed Site Concept Plan View

Date: 4/1/2006

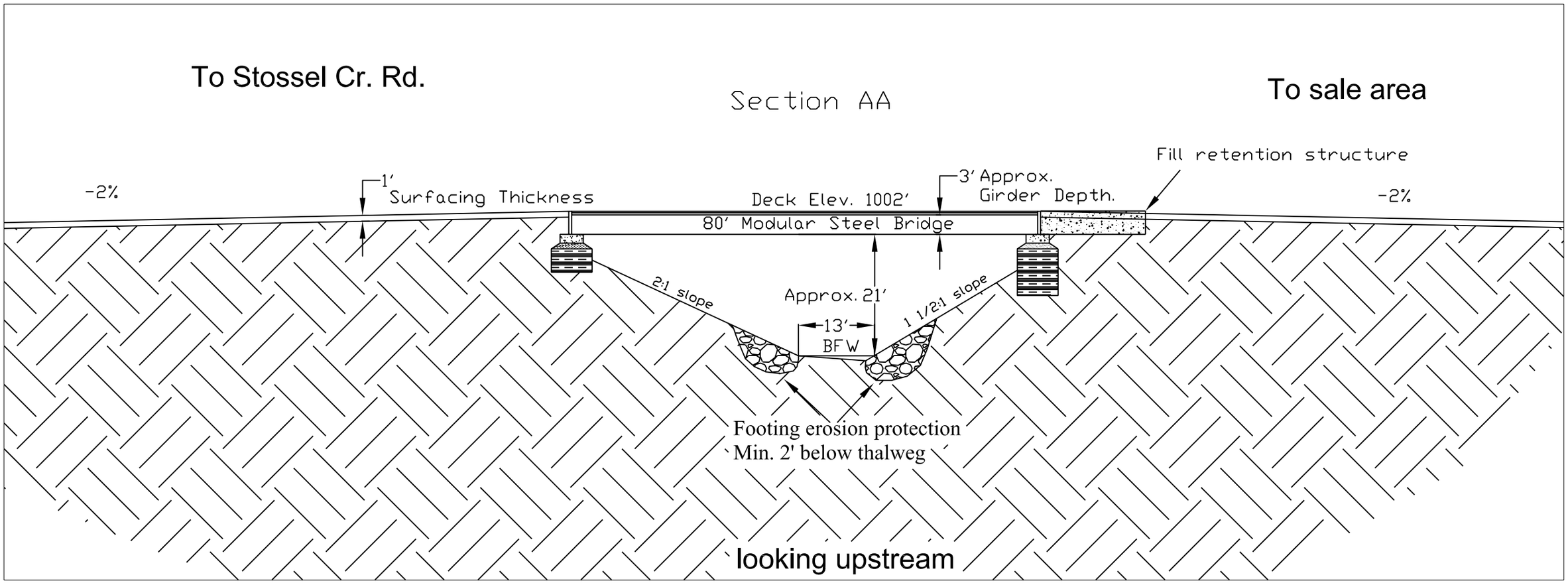
Scale: 1" = 20' (elevations ref. to local BM's)

Sheet: 2 of 4

Drawn By: A. McDonald

Drawn On: 4/1/2006

WASHINGTON STATE DEPARTMENT OF
Natural Resources
SPS Region



Reconstructed slope grades to match existing slopes outside fill removal area.

RMAP Pipe Replacement T26R08E-8

Doghair Timber Sale 30-077623

Proposed Bridge Profile View

Section AA

Date: 4/1/2006

Scale: 1" = 20', elevation ref. local BM's

Sheet: 4 of 4

Drawn By: A. McDonald

Drawn On: 4/1/2006

WASHINGTON STATE DEPARTMENT OF
Natural Resources
SPS Region

CULVERT REMOVAL/BRIDGE INSTALLATION PROCEDURE

1) Purchaser shall notify the State of intent to start project, and a pre-work conference shall be held before move in of equipment for the purpose of developing a Construction Plan. State will designate a representative that will be available on site when work is being performed in creek channel and arch being constructed.
2) Assemble the items in the Materials List on site before proceeding.
3) Remove 95% of fill and end haul as specified in Road Plan.
4) Set up pumps (3 required, with one as backup).
5) Dam up stream with sandbags and line floor of dam with plastic (to prevent sub-surface water flow), place clean rock on plastic to hold in place, and key leading edge of plastic into channel bottom. Build a catch basin at culvert outlet. Fill may need to be removed before the settling pond installation due to space limitations. Pump clean water at catch basin around work site and back into stream. Silt laden water shall be pumped away from site and onto forest floor a minimum of 200 feet from streams. Other stream bypass measures to be approved by Contract Administrator.
6) Remove culvert and construct bridge as specified in attached plans, design engineers specifications, and HPA.
7) Restore creek channel as directed by plans and/or Contract Administrator.
8) Divert stream flow into reconstructed channel while continuing to remove silt laden water from outflow catch basin until stream runs clear through channel.
9) Cover exposed soils within 100 feet of all streams with straw (minimum depth of 3 inches) and grass seed. Place erosion control matting and grass seed as specified in plans, or as directed by Contract Administrator.

Materials List

3 pumps, (one as a backup). The clean water pump shall have a minimum capacity of 300 gallons per minute. The silty water pump (settling pond) and the backup pump shall each have a minimum capacity of 200 gpm. Sufficient pump hose to accomplish water removals to appropriate locations.

10,000 square feet plastic sheet for settling ponds and to cover exposed soils during construction.

6 bales of straw for erosion control.

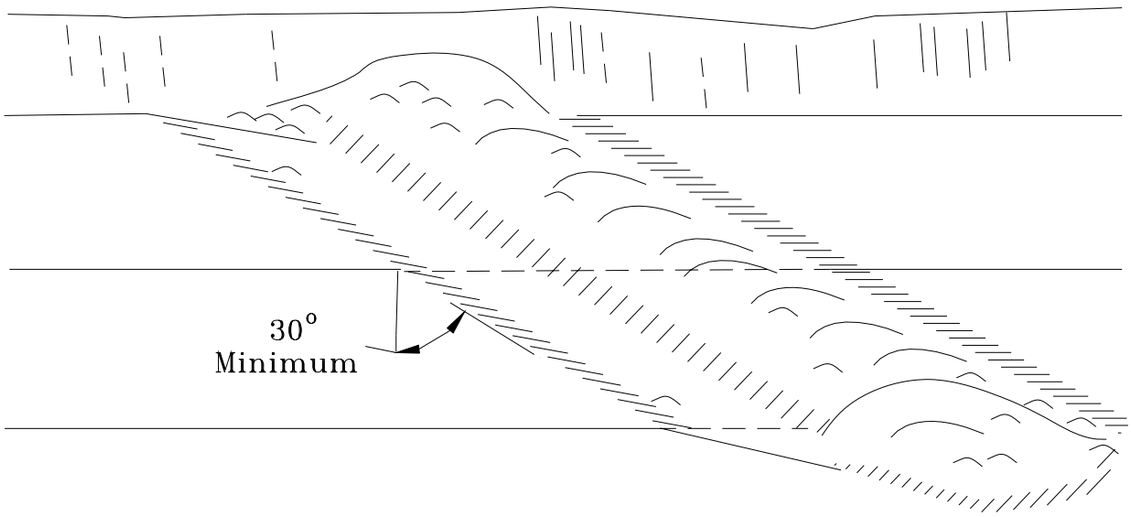
Date of seed application to be approved by Contract Administrator.

Additional equipment may be dictated by times and/or techniques of construction.

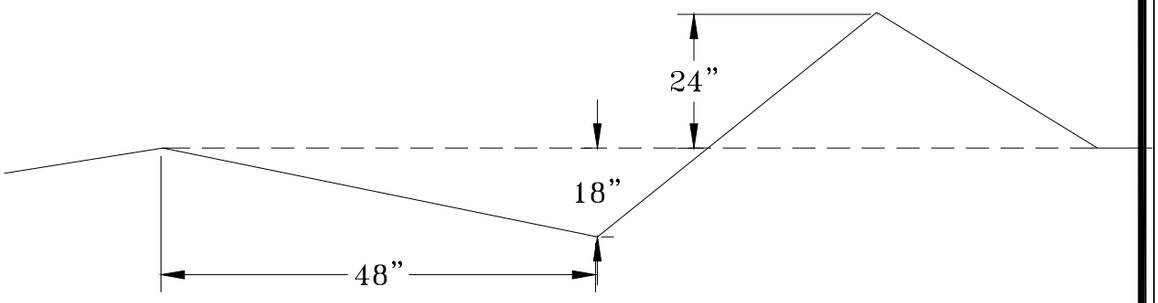
This suggested sequence and materials list is intended only as a guide. Specific site conditions or contractors experience may dictate different equipment and/or methods.

Non-Drivable Water Bar Detail

Cross Ditch



Cross Section at Centerline



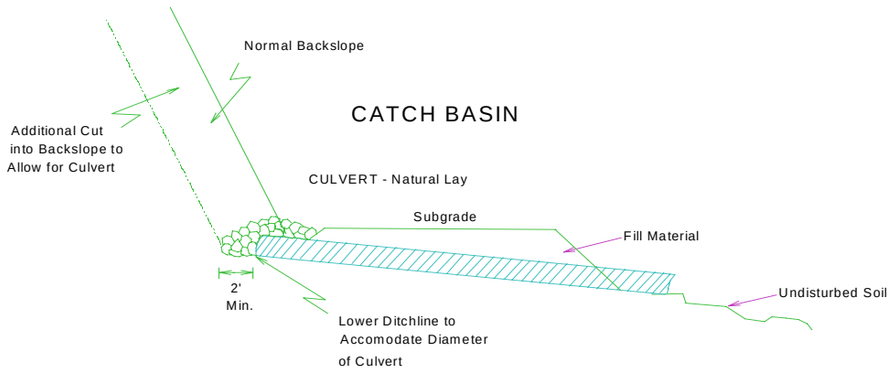
Water Bar Detail

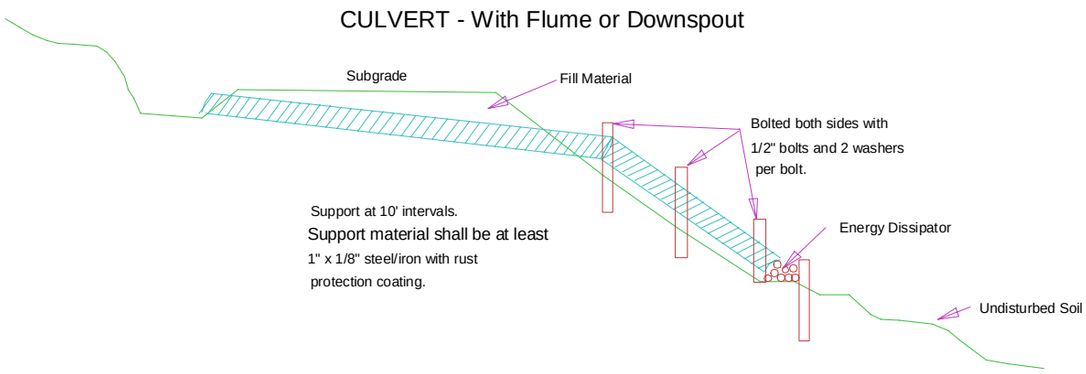
WASHINGTON STATE DEPARTMENT OF
Natural Resources
SPS Region

Scale : None
Drawn by: M.A.D.

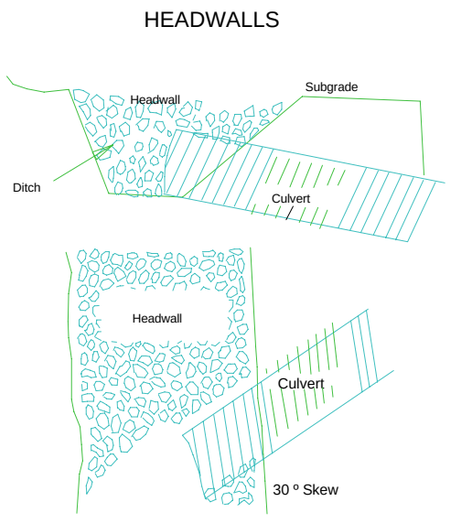
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)

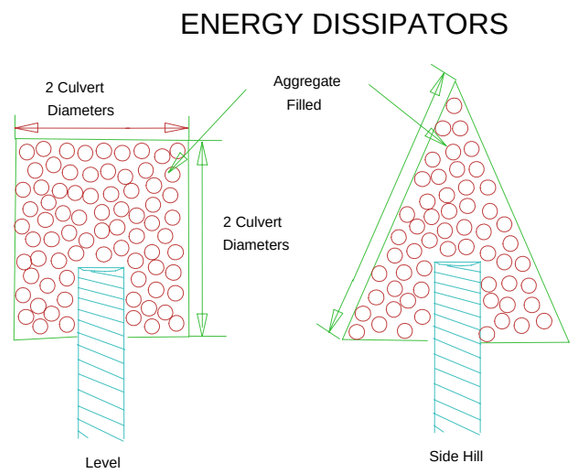




Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.



Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

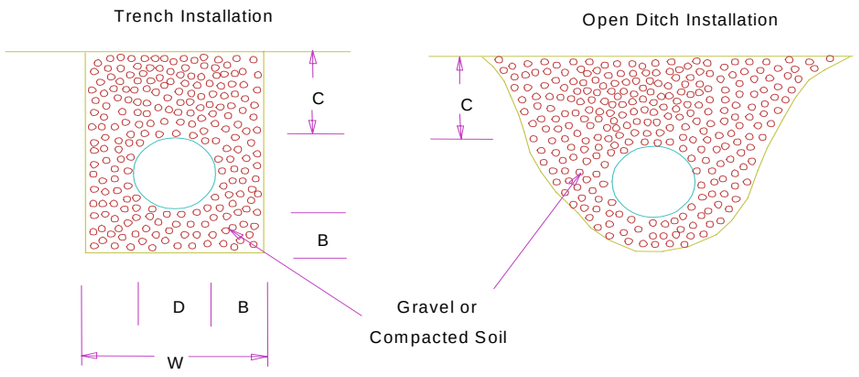
1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION, RECONSTRUCTION and PRE-HAUL MAINTENANCE (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills
   1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½ : 1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
   2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
   3. Undesirable slide materials and debris shall not be mixed into the surface material.

B. Surface
   1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
   2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
   3. Watering may be required to control dust and to retain fine surface rock.
   4. Desirable surface material shall not be bladed off the roadway.
   5. Replace surface material lost or worn away.
   6. Remove berms except as directed by the State.
   7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage
   1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
   2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
   3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
   4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
   5. Keep silt bearing surface runoff from getting into live streams.

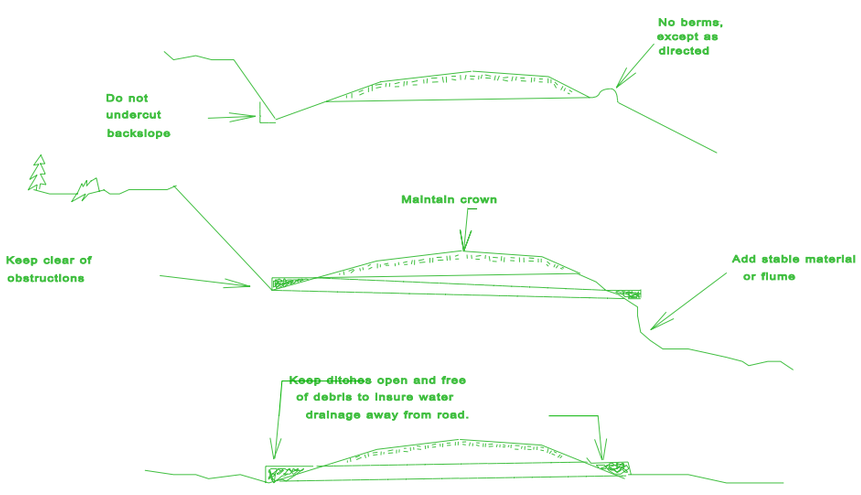
D. Structures
   Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season
   Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

F. Debris
   Remove fallen timber, limbs, and stumps from the slopes or roadway.

2. Existing Roads – Timber Sale, Operator Maintained
   A. Same as above but not to exceed the condition of the road on the date the contract was signed.

3. A.R.R.F. – Directed maintenance to comply with these specifications.



Legal Description: Section 17, T26NR08E W.M.

Rock Pit Name: On-Site Rock Pit, Doghair TS

PIT DEVELOPMENT PLAN

1. A minimum stripping width of 5 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.

2. Pile all reject rock and overburden away from pit working area as directed by the Contract Administrator.

3. Pit floor shall be sloped to allow drainage as shown. No ponding will be allowed.

4. Maximum face height will be no greater than what can be reached by the excavating equipment.

5. Material removal operations shall be at the direction of the Contract Administrator.

6. At the termination of use the pit face shall have a maximum backslope of 1:1, or as directed by Contract Administraror. Any Stockpiles produced shall be neat and regular in shape at the termination of use.

7. Quantity and Quality of ballast pit is not guaranteed by the State.

Legal Description: Section 11, T26NR07E W.M.

Rock Pit Name: SPS123-CV120

PIT DEVELOPMENT PLAN

1. A minimum stripping width of 5 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.

2. Pile all reject rock and overburden away from pit working area as directed by the Contract Administrator.

3. Pit floor shall be sloped to allow drainage as shown. No ponding will be allowed.

4. Maximum face height will be no greater than what can be reached by the excavating equipment.

5. Material removal operations shall be at the direction of the Contract Administrator.

6. At the termination of use the pit face shall have a maximum backslope of 1:1, or as directed by Contract Administraror. Any Stockpiles produced shall be neat and regular in shape at the termination of use.

7. Quantity and Quality of Sand and Gravel pit is not guaranteed by the State.

Legal Description: SW ¼ of the SW ¼ of Section 5, T26NR08E W.M.

Rock Pit Name: Drunken Charlie Pit

PIT DEVELOPMENT PLAN

1. A minimum stripping width of 10 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.

2. Pile all reject rock and overburden away from pit working area as directed by the Contract Administrator.

3. Pit floor shall be sloped to allow drainage as shown. No ponding will be allowed.

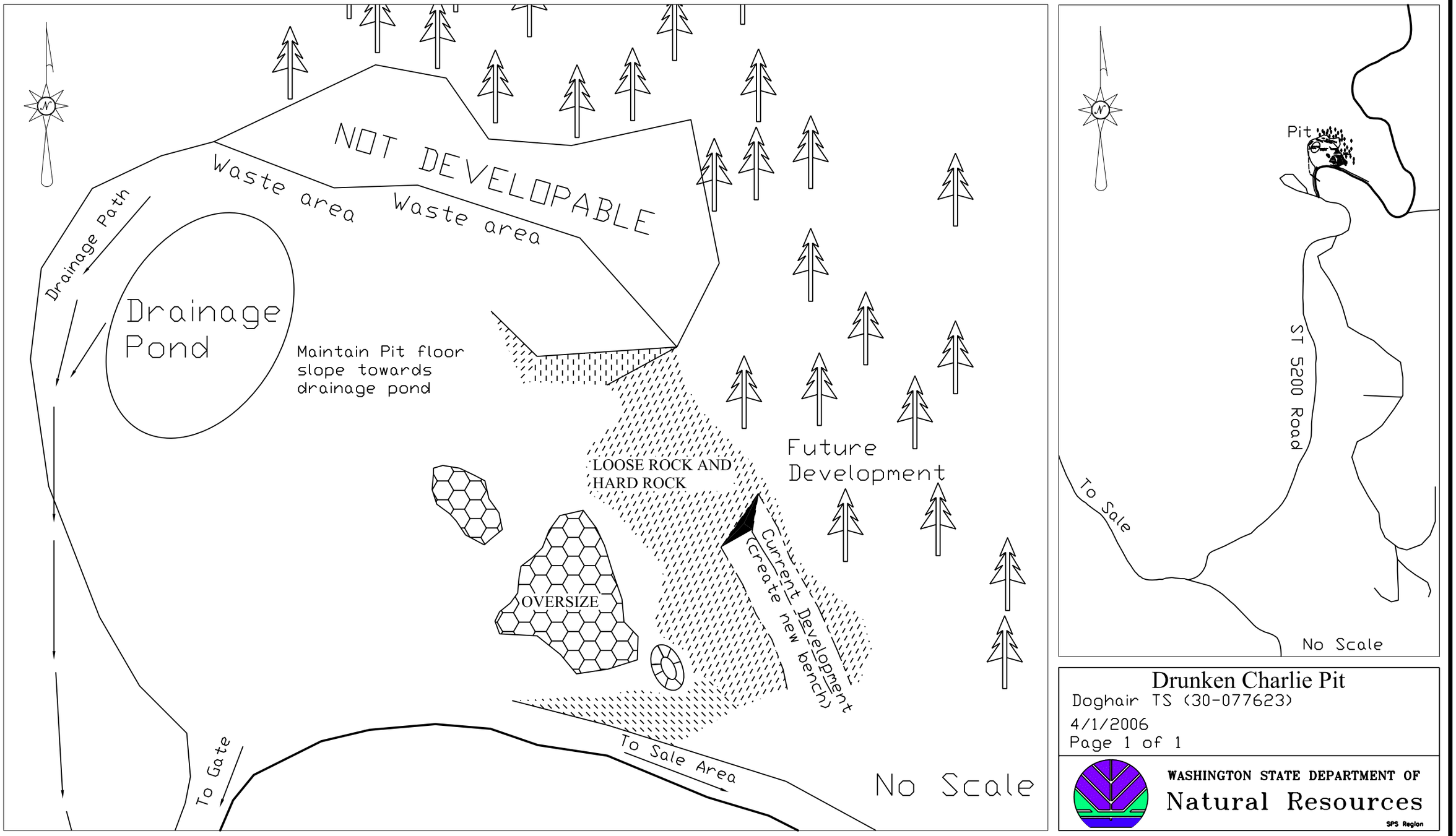
4. Maximum face height will be no greater than what can be reached by the excavating equipment.

5. Material removal operations shall be at the direction of the Contract Administrator.

6. At the termination of use the pit face shall have a maximum backslope of 1:1. Any Stockpiles produced shall be neat and regular in shape at the termination of use.

7. Quantity and Quality of ballast pit is not guaranteed by the State.

8. See attached Pit Drawing.



Drunken Charlie Pit

Doghair TS (30-077623)

4/1/2006

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WASHINGTON STATE DEPARTMENT OF
Natural Resources
SPS Region